

Amendments to the Claims

The following listing of the claims replaces all previous listings and versions of the claims in the application.

Listing of the Claims

Claims 1-48: (canceled)

49. (Currently Amended) An apparatus for forming molded items from thermoplastic workpieces, comprising:

- a workpiece heating mechanism operable to heat ~~sequentially~~ a series of thermoplastic workpieces;
- ~~a workpiece operation chamber;~~
- a workpiece manipulator operable to move each workpiece ~~sequentially~~ from the heating mechanism to a the workpiece operation chamber; and
- a mold and plug manipulator system operable to move a series of molds and plugs ~~sequentially~~ to the workpiece operation chamber,

so as to allow the workpiece manipulator and mold and plug manipulator configured to cause a single workpiece and a single mold and plug to substantially simultaneously arrive at the workpiece operation chamber to allow the workpiece manipulator to present the single workpiece to the single mold and plug so that the single each workpiece is to be formed into a molded item through the cooperative engagement of the single mold and plug, each single mold and plug representing a unique configuration by means of a corresponding mold and plug moved to the workpiece operation chamber in coordination with each workpiece moved into the workpiece operation chamber.

50. (Original) The apparatus of claim 49, further comprising a workpiece introduction system operable to introduce the series of workpieces sequentially into the workpiece heating mechanism.

51. (Original) The apparatus of claim 50, wherein the workpiece introduction system is an inline system.

52. (Original) The apparatus of claim 50, wherein the workpiece introduction system is a rotary turret system.

53. (Original) The apparatus of claim 49, wherein the mold and plug manipulator system is a rotary turret system.

54. (Original) The apparatus of claim 50, wherein the workpiece introduction system includes a cutter that is operable to form the series of workpieces from a roll of thermoplastic material.

55. (Original) The apparatus of claim 49, further comprising a mold preparation chamber, and wherein the mold and plug manipulator system is operable to move each of the molds from the mold preparation chamber to the workpiece operation chamber.

56. (Original) The apparatus of claim 55, wherein the mold preparation chamber includes a mold heating mechanism.

57. (Original) The apparatus of claim 49, further comprising a laser-marking system operable to mark each molded item following its removal from the workpiece operation chamber.

58. (Original) The apparatus of claim 49, further comprising a trimming system operable to trim each molded item following its removal from the workpiece operation chamber.

59. (Original) The apparatus of claim 58, wherein the trimming system includes a multiple-axis CNC system.

60. (Original) The apparatus of claim 49, wherein the molded items are dental aligners.

61. (Original) The apparatus of claim 49, wherein each plug in the series of plugs is configured for cooperation with a corresponding mold to ensure that the workpiece is pulled over the mold.

62. (New) An apparatus for forming molded items from thermoplastic workpieces, comprising:

- a workpiece heating mechanism operable to heat a series of thermoplastic workpieces;

- a workpiece manipulator operable to move each workpiece sequentially from the heating mechanism to a workpiece operation chamber;

- a mold and plug manipulator system operable to move a series of molds and plugs sequentially to the workpiece operation chamber, each workpiece to be formed into a molded item by means of a corresponding mold and plug moved to the workpiece operation chamber in coordination with each workpiece being moved into the workpiece operation chamber;

- a laser-marking system operable to mark each molded item following its removal from the workpiece operation chamber; and

- a trimming system operable to trim each molded item following its removal from the workpiece operation chamber.